CARINA MINE TENEMENT M77/1244A

DECLARED RARE AND PRIORITY FLORA SURVEY

Prepared for:

Polaris Metals NL

Prepared by:

Mattiske Consulting Pty Ltd

April 2009

MATTISKE CONSULTING PTY LTD

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1. SUMMARY

Mattiske Consulting Pty. Ltd. was commissioned in March 2009 by Polaris Metals NL to carry out a Rare and Priority Flora survey of the Carina Mine Tenement (M77/1244A). Mattiske Consulting Pty. Ltd. has previously carried out both drill hole surveys and undertaken vegetation mapping within the Carina Exploration Tenement E77/1115. During these surveys only *Grevillea georgeana* (P3) and *Daviesia purpurascens* (P4) have been recorded as occurring within the Mine Tenement M77/1244A boundary.

During the survey of Mine Tenement M77/1244A two plant taxa listed as a Priority species by the Department of Environment and Conservation were recorded within the Carina Mine Tenement. These two taxa were *Grevillea georgeana* (P3) and *Daviesia purpurascens* (P4). A total of 330 *Grevillea georgeana* (P3) plants were recorded within Mine Tenement M77/1244A. The *Grevillea georgeana* (P3) plants were located in two separate groupings within the tenement. The larger of the two communities of *Grevillea georgeana* (P3) was located within a proposed waste area on the eastern side of the area to be mined, and next to the proposed mine area. A total of 87 *Daviesia purpurascens* (P4) plants were recorded within the Mine Tenement M77/1244A, across 22 separate locations. *Daviesia purpurascens* (P4) was recorded only in the southern third of the mine tenement.

The locating of a tailings waste area on the eastern side of the proposed mine area will destroy an area, approximately 200 m in diameter, which contains a sizeable population of *Grevillea georgeana* (P3). It will also disturb some local drainage channels. Locating the tailings waste area on the western side or northern side of the proposed mine area will cause minimal disturbances to populations of Priority Flora.

2. INTRODUCTION

Mattiske Consulting Pty. Ltd. was commissioned in March 2009 by Polaris Metals NL to carry out a Rare and Priority Flora survey of the Carina Mine Tenement (M77/1244A). The Carina Mine Tenement was surveyed between the 30th March and 2nd April 2009.

2.1 Location

The Carina Mine Tenement M77/1244A is located approximately 105 km north of the town of Southern Cross, in Western Australia. The area to be surveyed lies within the Coolgardie Botanical District (Beard, 1990).

2.2 Climate

Beard (1990) described the climate of the Coolgardie Botanical District as arid non-seasonal to semi arid Mediterranean, characterised by an arid climate with cool winters and hot, dry summers. Annual precipitation in the Coolgardie Botanical District ranges from 200 mm to 300 mm, with the bulk of the precipitation falling in the winter months, with sporadic summer cyclonic rainfall. Southern Cross, which is located to the southwest of the survey area, has an annual rainfall of 294 mm (Bureau of Meteorology 2009).

2.3 Geology and Topography

The Polaris Metals NL exploration tenements are generally located within an area, which consist of gently undulating plains with occasional ranges of low hills lying on the 'Southern Cross Terrains' of the Yilgarn Craton (Department of Conservation and Land Management, 2003). Beard (1972, 1990) described the Coolgardie Botanical District as having major greenstone belts, which provide the hilly topography, together with banded ironstone ridges rising from the brown calcareous earth of the surrounding plains. There are four main banded ironstone ranges within the area: the Helena and Aurora, Die Hardy, Jackson and Windarling Ranges (Department of Environment and Conservation, 2007). A number of endemic threatened species and communities are associated with each Banded Ironstone Formation (BIF) (Department of Environment and Conservation 2009a; Environmental Protection Authority 2007; Gibson and Lyons 1997, 2001; Gibson *et al.* 2007).

2.4 Flora and Vegetation

The survey area lies within the Coolgardie Botanical District, as defined by Beard (1972; 1990). This corresponds with the Coolgardie 2 Bioregion (COO2 – Southern Cross subregion) as defined by the Interim Biogeographical Regionalisation for Australia (IBRA) (Cowan *et al.* 2001). This subregion is characterised by high species and ecosystem diversity, as it is a biogeographic interzone between the Coolgardie and Murchison biogeographic regions (Cowan *et al.* 2001). Dominant plant families within the Coolgardie Botanical District include Myrtaceae (myrtles such as Eucalypts and Melaleucas), Asteraceae (daisies), Chenopodiaceae (salt bushes) and Poaceae (grasses). The Coolgardie Botanical District is characterized by Eucalypt woodlands and covers 5% of the State of Western Australia (Beard 1990).

2.5 Clearing of Native Vegetation

The *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* dictate that any clearing of native vegetation in Western Australia requires a permit to do so from the Department of Industry and Resources. 'Native Vegetation' refers to native vegetation as indigenous aquatic and terrestrial vegetation, including dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition but not vegetation planted in a plantation (*Environmental Protection (Clearing of Native Vegetation) Regulations 2004, section 3(1)).* In the *Environmental Protection Act 1986* Section 51A, clearing is defined as: the killing or destruction of; the removal of; the severing or ringbarking of trunks or stems of; or the doing of substantial damage to some or all of the native vegetation in an area, including the flooding of land, the burning of vegetation, the grazing of stock or an act or activity that results in the above.

Ten clearing principles are specified in Schedule 5 of the *Environmental Protection Act 1986*:

1. Native vegetation should not be cleared if it comprises a high level of biodiversity.
2. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia.
3. Native Vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
4. Native vegetation should not be cleared if it compromises the whole or part of, or is necessary for the maintenance of a threatened ecological community.
5. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
6. Native vegetation should not be cleared if it is growing in, or in association with, and environment associated with a watercourse or wetland.
7. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
8. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
9. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.
10. Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

2.6 Rare and Priority Flora

Species of flora and fauna are afforded Rare or Priority conservation status where their populations are restricted geographically or threatened by local processes. The Department of Environment and Conservation (2009a) recognizes these threats of extinction and consequently applies regulations towards population and species protection (Appendix A1).

Rare Flora species are gazetted under subsection 2 of section 23F of the *Wildlife Conservation Act 1950* (WA) and therefore it is an offence to "take" or damage rare flora without Ministerial approval. Section 23F of the *Wildlife Conservation Act 1950* (WA) defines "to take" as "… to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora to cause or permit the same to be done by any means."

Priority Flora are under consideration for declaration as 'rare flora', but are in urgent need of further survey (Priority one to three) or require monitoring every 5-10 years (Priority four). Appendix A1 presents the definitions of Declared Rare and the four Priority ratings under the *Wildlife Conservation Act 1950* (WA) as extracted from Department of Environment and Conservation (2009a).

2.7 Threatened Flora Species and Ecological Communities

Threatened flora species are a matter of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). A person must not take an action that has, will have, or is likely to have a significant impact on a listed threatened species or ecological community, without approval from the Commonwealth Minister for the Environment and Water Resources. Appendix A2 presents the definitions of the categories of threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).

Communities are described as 'Threatened Ecological Communities' (TECs) if they have been defined by the Western Australian Threatened Ecological Communities Scientific Advisory Committee and found to be Presumed Totally Destroyed (PD), Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) (Department of Environment and Conservation, 2009b). For further definitions of TEC categories and criteria refer to English and Blyth (1997, 1999). Some Western Australian TECs have also been listed as "Threatened Ecological Communities" under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (Department of the Environment, Water, Heritage and the Arts, 2009b). Appendix A3 presents a summary of the definitions of Threatened Ecological Communities (Department of Environment and Conservation, 2009b).

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Department of Environment and Conservation's Priority Ecological Community Lists under Priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as threatened ecological communities. Ecological Communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5 (Department of Environment and Conservation, 2009b). Appendix A4 presents a summary of the definitions of Priority Ecological Communities (Department of Environment and Conservation, 2009b).

2.8 Local and Regional Significance

The Environmental Protection Authority (2004) in Guidance Statement 51 states that "species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than as Declared Rare Flora or Priority Flora". According to Environmental Protection Authority (2004) Guidance Statement 51, other significant flora may include taxa that:

- have a keystone role in a particular habitat for threatened species, or supporting large populations representing a significant proportion of the local regional population of a species;
- have relic status;
- have anomalous features that indicate a potential new discovery;
- are representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
- show the presence of restricted subspecies, varieties, or naturally occurring hybrids;
- have local endemism/a restricted distribution;
- are poorly reserved (Environmental Protection Authority, 2004).

3. OBJECTIVES

The specific objectives of survey of the Carina Mine Tenement M77/1244A were to:

- Identify and record the locations of any Declared Rare and Priority Flora within the Carina Mine Tenement;
- Record the number of individual specimens of any Declared Rare and priority flora found within the Carina Mine Tenement;
- Prepare a report summarising the findings.

4. METHODS

An initial search for the Declared Rare and Priority flora species known to occur in the region was made using the Western Australian Herbarium database compiled by the Western Australian Herbarium (2009c).

Four experienced Botanists from Mattiske Consulting Pty Ltd surveyed the Carina Mine Tenement between the 30th March and 2nd April 2009. Polaris Metals NL supplied a map of the Mine Tenement M77/1244A (Figure 1), which included the location of the area to be mined, together with the locations of proposed waste and utility areas.

The search for Declared Rare and Priority Flora was conducted by traversing the mine tenement along northings, starting at the northern boundary of the tenement. Each survey line ran between the eastern and western tenement boundaries, with a 100 m extension beyond the tenement boundary. Survey lines were 100 m apart in the north-south direction. The search for Declared Rare and Priority Flora involved searching the area up to 50 m on each side of the centre of a survey line. The survey continued until the southern boundary of the tenement was reached. The geographical location of any Declared Rare or Priority Flora, together with the number of individual plants, was recorded. All geographical coordinates cited in this report are based on the GDA94 datum. The survey was undertaken in accordance with Guidance Statement 51 (Environmental Protection Authority 2004).

Nomenclature of the species recorded is in accordance with the Department of Environment and Conservation (2009c).

5. RESULTS

5.1 Desktop Survey for Potential Rare and Priority Flora Species in the Survey Area

A thorough desktop survey of potential Rare and Priority Flora species potentially in the greater Yilgarn Iron Ore Project Area has previously been reported. Refer to Mattiske Consulting Pty Ltd (2008a) for further detail on Declared Rare and Priority species known to occur in the wider region. In the immediate vicinity of the Carina Exploration Tenement, there are a range of Priority Flora species according to the *Wildlife Conservation Act 1950* (WA) and listed on the Department of Environment and Conservation (2009c). These species are:

- *Pseudactinia* sp. Bungalbin Hill (F.H. & M.P. Molemans 3069) EPACRIDACEAE (Priority 1)
  Shrub to between 0.3 m and 0.8 m found growing on yellow sands or yellow-brown loamy sands. It produces pink or red flowers between July and October. There are 14 records of this species at the Western Australian Herbarium. This species has been recorded within the Coolgardie, Murchison, Yalgoo and Avon Wheatbelt bioregions.

- *Acacia crenulata* MIMOSACEAE (Priority 3)
  Bushy shrub to Tree between 0.7 m and 3 m found growing on sands and clays often in association with rocky rises and granite outcrops. It produces yellow flowers. There are 17 records of this species at the Western Australian Herbarium. This species has been recorded within the Coolgardie bioregions.

- *Acacia eremophila* var. *variabilis* MIMOSACEAE (Priority 3)
  Shrub between 1 m and 1.6 m found growing on sands and sandy-loams. It produces yellow flowers. There are 16 records of this species at the Western Australian Herbarium. This species has been recorded within the Coolgardie, Murchison and Wheatbelt areas and extends eastwards to north of Esperance.

- *Grevillea georgeana* PROTEACEAE (Priority 3)
  Erect shrub between 1 m and 3 m high, found growing on stony loams and clay associated with ironstone hill tops and slopes. It produces pink, red and cream flowers between January and March and September and November. There are 40 records of this species at the Western Australian Herbarium. This species has been recorded within the Coolgardie and Murchison bioregions.

- *Spartothamnella* sp. Helena and Aurora Range LAMIACEAE (Priority 3)
  Shrub to between 0.3 m and 1 m found growing on rocky areas associated with ironstone. There are 12 records of this species at the Western Australian Herbarium. This species has been recorded within the Coolgardie, Yalgoo and Avon Wheatbelt bioregions.

- *Daviesia purpurascens* PAPILIONACEAE (Priority 4)
  Erect shrub to 1 m found growing on sandy or loamy soils on flats and ridges, which produces yellow, red and brown flowers between August and October. There are 42 records of this species at the Western Australian Herbarium. This species has been recorded principally within the Coolgardie and Goldfields bioregions, with other specimens recorded in the Carnarvon, Murchison, Avon Wheatbelt, Geraldton Sandplain and Mallee bioregions.

All of the species listed above have been recorded by Mattiske Consulting Pty. Ltd. either within the Carina Exploration Tenement E77/1115 (Mattiske Consulting Pty. Ltd. 2007a, 2008b, 2008c) or along the proposed Carina Haul Road route (Mattiske Consulting Pty. Ltd. 2008d). Only *Grevillea georgeana* (P3) and *Daviesia purpurascens* (P4) have previously been recorded as occurring within the boundary of the Carina Mine Tenement M77/1244A.

5.2 Rare and Priority Flora

No plant taxa gazetted as Declared Rare Flora pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act 1950* (WA) (Department of Environment and Conservation, 2009d) or listed as Threatened pursuant to Schedule 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (Department of the Environment, Water, Heritage and the Arts 2009c) were recorded during the survey within the Carina Mine Tenement.

Two plant taxa listed as a Priority species by the Department of Environment and Conservation (2009c) were recorded within the Carina Mine Tenement. These two taxa were *Grevillea georgeana* (P3) and *Daviesia purpurascens* (P4). The geographical location and number of individuals of each taxon recorded are set out in Table 1.

A total of 330 *Grevillea georgeana* (P3) plants were recorded within Mine Tenement M77/1244A. The *Grevillea georgeana* (P3) plants were located in two separate groupings within the tenement. The larger of the two communities of *Grevillea georgeana* (P3) is located within a proposed waste area on the eastern side of the area to be mined, and next to the proposed mine area (Table 1; Figure 1). The number of plants within this community, which is dominated by *Grevillea georgeana* (P3), is an estimate based on the average density of plants within the community. The second *Grevillea georgeana* (P3) community is located on the eastern boundary of the mine tenement, and is not located on an area of land which is proposed to be disturbed (Table 1; Figure 1).

A total of 87 *Daviesia purpurascens* (P4) plants were recorded within the Mine Tenement M77/1244A, across 22 separate locations. *Daviesia purpurascens* (P4) was recorded only in the southern third of the mine tenement (Table 1; Figure 1).

Table 1: Geographical Location and Number of Individual Priority Flora Recorded Within Mine Tenement M77/1244A (Carina).
Geographical location is within Zone 51. The number of individual plants is the number of plants within a 10 m radius of the indicated location, unless otherwise indicated.

Species	Easting [MGA94]	Northing [MGA94]	Number of Plants	Remarks
Grevillea georgeana (P3)	213386	6626687	30	Total number of plants in community, 80 m in diameter. GPS coordinates are for the centre of the population of plants.
Grevillea georgeana (P3)	212211	6626878	300	Estimated total number of plants in community, 200 m in diameter. GPS coordinates are for the centre of the population of plants.
Daviesia purpurascens (P4)	212151	6626008	5	
Daviesia purpurascens (P4)	212128	6626000	1	
Daviesia purpurascens (P4)	213085	6627039	2	
Daviesia purpurascens (P4)	213078	6627057	9	
Daviesia purpurascens (P4)	213092	6627056	7	
Daviesia purpurascens (P4)	212243	6626045	1	
Daviesia purpurascens (P4)	212229	6626047	2	
Daviesia purpurascens (P4)	212219	6626051	7	
Daviesia purpurascens (P4)	212195	6626045	6	
Daviesia purpurascens (P4)	212179	6626053	7	
Daviesia purpurascens (P4)	212203	6626026	1	
Daviesia purpurascens (P4)	213441	6626046	11	
Daviesia purpurascens (P4)	213460	6626023	4	
Daviesia purpurascens (P4)	213181	6627897	7	
Daviesia purpurascens (P4)	212819	6626819	1	
Daviesia purpurascens (P4)	213030	6625735	1	
Daviesia purpurascens (P4)	213545	6626418	4	
Daviesia purpurascens (P4)	213355	6626108	2	
Daviesia purpurascens (P4)	213569	6626007	1	
Daviesia purpurascens (P4)	213151	6626964	1	
Daviesia purpurascens (P4)	213396	6626213	2	
Daviesia purpurascens (P4)	213460	6626246	5	

6. DISCUSSION

The Carina Mine Tenement, M77/1244A, is predominantly composed of Open Woodlands – Woodlands of mixed Eucalypt species over mixed shrubs (Mattiske Consulting Pty. Ltd. 2008c). The other major vegetation unit within the mine tenement area is a shrubland of *Allocasuarina campestris, Casuarina pauper, Banksia arborea, Melaleuca hamata, Melaleuca nematophylla, Acacia sibina, Calycopeplus paucifolius* and *Brachychiton gregorii* over *Baeckea elderiana* and *Philotheca brucei* subsp. *brucei* and *Eremophila decipiens* subsp. *decipiens*, with emergent *Eucalypt species* on red-brown clay upper slopes and ridges (Vegetation Unit S2, Mattiske Consulting Pty. Ltd. 2008c). This shrubland characterizes the vegetation which occurs on the area proposed to be mined (Figure 1).

The area to the east of the area proposed to be mined is one of two possible areas to be used as a mine tailings waste area. This area contains a community of *Grevillea georgeana* (P3) plants, with an estimated 300 individuals. In addition the area contains minor drainage channels associated with low lying areas in the landscape. The use of this area for a mine tailings waste site would destroy the *Grevillea georgeana* (P3) community in the vicinity of the proposed mine and disrupt the historical water flows within the area. A second potential mine tailings waste area to the west of the area proposed to be mined does not contain any Priority Flora or water drainage channels. Use of this site for a mine tailings waste site would cause minimal disturbance to both Priority Flora and historical water flow patterns.

A second community of *Grevillea georgeana* (P3) was located near the eastern boundary of the mine tenement, outside any areas proposed for operational usage. A number of *Daviesia purpurascens* (P4) were recorded near this area (Figure 1).

Grevillea georgeana (P3) has been previously recorded by Mattiske Consulting Pty. Ltd. within the broader Carina exploration tenement E77/1115 (Mattiske Consulting Pty. Ltd. 2008c), in the area on and surrounding the Yendilberin Hills, to the south east of the proposed mine site. Consequently, the populations of *Grevillea georgeana* (P3) recorded within the mine tenement do not represent the sole populations of this taxon which have been recorded in surveys of the broader Carina exploration tenement. In addition *Grevillea georgeana* (P3) has been recorded by Mattiske Consulting Pty. Ltd. during surveys of other Polaris Metals NL exploration tenements. *Grevillea georgeana* (P3) has been recorded within the Chameleon exploration tenement E77/946-1 (Mattiske Consulting Pty. Ltd. 2007b); the Vela exploration tenement E77/1076-1 (Mattiske Consulting Pty. Ltd. 2007c; 2009); and the Bungalbin Eastern exploration tenement (Mattiske Consulting Pty. Ltd. 2007d; 2008e; 2008f; 2008g).

The majority of the *Daviesia purpurascens* (P4) recorded within the mine tenement area were located within the southern third of the tenement (Figure 1). Many of these plants occur either within the area which is proposed to be mined or in the area to the south of the mine which is proposed for utility purposes.

Populations of *Daviesia purpurascens* (P4) have been recorded by Mattiske Consulting Pty. Ltd. within the broader Carina exploration tenement E77/1115 (Mattiske Consulting Pty. Ltd. 2008c). Consequently, the populations of *Daviesia purpurascens* (P4) recorded within the mine tenement do not represent the sole populations of this taxon which have been recorded in surveys of the broader Carina exploration tenement. In addition *Daviesia purpurascens* (P4) has been recorded by Mattiske Consulting Pty. Ltd. during surveys of other Polaris Metals NL exploration tenements. *Daviesia purpurascens* (P4) has recorded within the J4 and Musca exploration tenement E77/1097-1 (Mattiske Consulting Pty. Ltd. 2008h; 2008i); the J5, Bungalbin Central and Bungalbin Eastern tenement E77/842-1 (Mattiske Consulting 2007d, 2008e, 2008f, 2008g, 2008j); and the Vela tenement e77/1076-1 (Mattiske Consulting Pty. Ltd. 2009)

The results of numerous surveys conducted by Mattiske Consulting Pty. Ltd. across a range of Polaris Metals NL exploration tenements within their Yilgarn Iron Ore Project area indicates that both *Grevillea georgeana* (P3) and *Daviesia purpurascens* (P4) have been found to occur in a broad area across the various Polaris Metals NL exploration tenements.

Daviesia purpurascens (P4) has been the more commonly recorded of the two taxa, both in terms of its geographical range and absolute number of specimens. Within the mine tenement, irrespective of the location of the tailings waste dump, there will be some clearing of the *Daviesia purpurascens* (P4) population present at the southern end of the proposed mine area.

The locating of a tailings waste area on the eastern side of the proposed mine area will destroy an area, approximately 200 m in diameter which contains a sizeable population of *Grevillea georgeana* (P3). It will also disturb some local drainage channels. Locating the tailings waste area on the western side or northern side of the proposed mine area will cause minimal disturbances to populations of Priority Flora.

7. RECOMMENDATIONS

The following recommendations are proposed to reduce the disturbance to the surrounding area:

- If practical, the mine tailings waste area should be located to either the northern or western sides of the proposed mine area to avoid disturbing the population of *Grevillea georgeana* (P3) located on the eastern side of the proposed mine area;
- Ground disturbance and clearing of vegetation should be limited to that which is essential;
- Maintain standard vehicle hygiene practices to minimise the risk of spreading introduced (exotic) weeds;
- Retain and stockpile topsoil for use in the later rehabilitation of roads and other areas cleared in the process of exploration;
- Maintain existing drainage systems, i.e. do not allow roads etc. to disrupt or divert historic water flow patterns. Where drainage systems are interrupted by road works, the use of culverts to assist in maintaining natural water flow patterns should be implemented;
- Avoid driving vehicles across undisturbed ground;
- The creation of new tracks should be restricted to that which is absolutely necessary, ensuring equipment blades are set above ground level to minimize disturbance to topsoil, rootstock and to reduce soil erosion.

8. ACKNOWLEDGEMENTS

The authors would like to thank Paul Rokich and Peter Andrea from Polaris Metals NL for their assistance on this project.

9. LIST OF PARTICIPANTS

The following personnel of Mattiske Consulting Pty Ltd have been involved with this project:

Principal Ecologist: Dr. E. M. Mattiske

Experienced Botanists: Mr. D. Angus
Ms. M. van Wees
Ms. F. de Wit
Mr. T. Phillips

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APPENDIX A1: DEFINITION OF RARE AND PRIORITY FLORA SPECIES (Department of Environment and Conservation 2009a)

Conservation Code	Category
R	**Declared Rare Flora – Extant Taxa** "Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection and have been gazetted as such."
P1	**Priority One – Poorly Known Taxa** "Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey."
P2	**Priority Two – Poorly Known Taxa** "Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but urgently need further survey."
P3	**Priority Three – Poorly Known Taxa** "Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but need further survey."
P4	**Priority Four – Rare Taxa** "Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years."

APPENDIX A2: CATEGORIES OF THREATENED FLORA SPECIES (Department of the Environment, Water, Heritage and the Arts. 2009a)

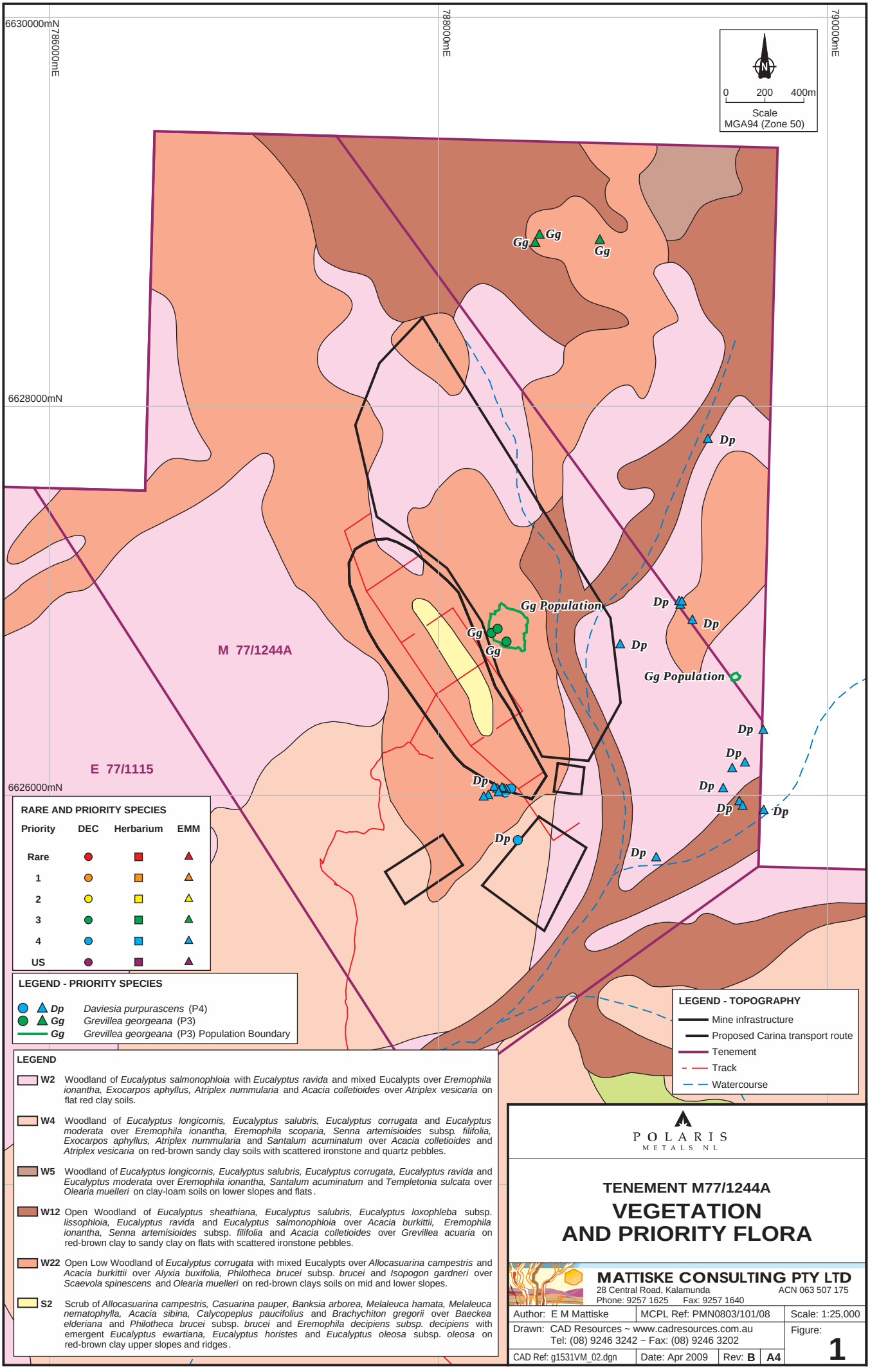
Category Code	Category
Ex	**Extinct** Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
ExW	**Extinct in the Wild** Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	**Critically Endangered** Taxa which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	**Endangered** Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	**Vulnerable** Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

APPENDIX A3 : SUMMARY OF THREATENED ECOLOGICAL COMMUNITIES (Department of Environment and Conservation 2009b)

Category Code	Category
PTD	**Presumed Totally Destroyed** An ecological community will be listed as Presumed Totally Destroyed if there are no recent records of the community being extant and either of the following applies: (i) records within the last 50 years have not been confirmed despite thorough searches or known likely habitats or; (ii) all occurrences recorded within the last 50 years have since been destroyed.
CE	**Critically Endangered** An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future, meeting any one of the following criteria: (i) The estimated geographic range and distribution has been reduced by at least 90% and is either continuing to decline with total destruction imminent, or is unlikely to be substantially rehabilitated in the immediate future due to modification; (ii) The current distribution is limited ie. highly restricted, having very few small or isolated occurrences, or covering a small area; (iii) The ecological community is highly modified with potential of being rehabilitated in the immediate future.
E	**Endangered** An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. The ecological community must meet any one of the following criteria: (i) The estimated geographic range and distribution has been reduced by at least 70% and is either continuing to decline with total destruction imminent in the short term future, or is unlikely to be substantially rehabilitated in the short term future due to modification; (ii) The current distribution is limited ie. highly restricted, having very few small or isolated occurrences, or covering a small area; (iii) The ecological community is highly modified with potential of being rehabilitated in the short term future.
V	**Vulnerable** An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing high risk of total destruction in the medium to long term future. The ecological community must meet any one of the following criteria: (i) The ecological community exists largely as modified occurrences that are likely to be able to be substantially restored or rehabilitated; (ii) The ecological community may already be modified and would be vulnerable to threatening process, and restricted in range or distribution; (iii) The ecological community may be widespread but has potential to move to a higher threat category due to existing or impending threatening processes.

APPENDIX A4: SUMMARY OF PRIORITY ECOLOGICAL COMMUNITIES (Department of Environment and Conservation 2009b)

Category Code	Category
P1	**Poorly-known ecological communities** Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist.
P2	**Poorly-known ecological communities** Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, un-allocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation.
P3	**Poorly known ecological communities** (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii) Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; (iii) Communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing and inappropriate fire regimes.
P4	Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.
P5	**Conservation Dependent ecological communities** Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.



POLARIS METALS NL

TENEMENT M77/1244A

VEGETATION AND PRIORITY FLORA

MATTISKE CONSULTING PTY LTD
28 Central Road, Kalamunda ACN 063 507 175
Phone: 9257 1625 Fax: 9257 1640

Author: E M Mattiske	MCPL Ref: PMN0803/101/08	Scale: 1:25,000
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